

Research Note

Gastrointestinal Helminths of the Southwestern Earless Lizard, *Cophosaurus texanus scitulus*, and the Speckled Earless Lizard, *Holbrookia maculata approximans* (Phrynosomatidae)

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ABSTRACT: Fifty-three *Cophosaurus texanus scitulus* from Pima County, Arizona, and 15 *Holbrookia maculata approximans* from Cochise County, Arizona, were examined for helminths. One nematode species, *Thubunaea iguanae* (prevalence 8%), 1 cestode species, *Oochoristica* sp. (prevalence 2%), and a juvenile acanthocephalan, *Acanthocephalus* sp. (prevalence 2%) were recovered from *C. texanus scitulus* (helminth prevalence 11%). All are new host records. Two nematode species, *Atractis penneri* (prevalence 13%) and *Physaloptera* sp. (prevalence 7%), were recovered from *H. maculata approximans* (helminth prevalence 13%).

KEY WORDS: Cestoda, *Oochoristica* sp., Nematoda, *Thubunaea iguanae*, *Atractis penneri*, *Physaloptera* sp., Acanthocephala, *Acanthocephalus* sp., *Cophosaurus texanus scitulus*, *Holbrookia maculata approximans*, Phrynosomatidae, prevalence, intensity.

The greater earless lizard, *Cophosaurus texanus* Troschel, 1850, ranges from central Arizona through central and south Texas into Mexico; the lesser earless lizard, *Holbrookia maculata* Girard, 1851, ranges from southern South Dakota, south to Guanajuato, Mexico, and from western Arizona, east to the Great Plains (Stebbins, 1985). To our knowledge, there are 3 previous reports of helminths in *C. texanus* (Gambino, 1958; Specian and Ubelaker, 1974; McAllister, 1988) and 2 reports for *H. maculata* (Gambino, 1958; Gambino and Heyneman, 1960). In this note, we report the results of a helminth survey of 2 subspecies, the southwestern earless lizard, *Cophosaurus texanus scitulus* (Peters, 1951), and the speckled earless lizard, *Holbrookia maculata approximans* Baird, 1858.

We examined 53 *C. texanus scitulus* (mean snout–vent length, SVL \pm SD = 60 mm \pm 8.1, range 40–71 mm) from Sabino Canyon (elevation 883 m), Santa Catalina Mountains, west of Tucson, Pima County, Arizona (32°20'N, 110°49'W). Thirty-seven were collected in 1966, 10 in 1967, and 6 in 1969. Fifteen *H. maculata approximans* (mean SVL = 51 mm \pm 6.6, range 39–60 mm) from the southern edge of Willcox, Cochise County, Arizona (32°14'N, 109°50'W,

elevation 1,269 m) were also examined. Ten were collected in 1966 and 5 in 1967. Lizards were shot with 22 caliber dust shot and preserved in Bouin's fixative. They were later stored in ethyl alcohol. In 1991, each abdomen was opened and the esophagus, stomach, and small and large intestines were examined. Each organ was slit longitudinally and examined under a dissecting microscope. The liver and body cavity were also examined. Helminths were identified using glycerol wet mounts. The cestodes and the acanthocephalan were stained with Delafield's hematoxylin and mounted in Canada balsam. Voucher specimens were deposited in the U.S. National Parasite Collection (Beltsville, Maryland 20705): *Oochoristica* sp. (81959), *Thubunaea iguanae* (81958), *Acanthocephalus* sp. (81960), *Atractis penneri* (82096), and *Physaloptera* sp. (82097).

Six *C. texanus scitulus* were infected with helminths (prevalence 11%). One male lizard harbored 8 third-stage *Thubunaea iguanae* Telford, 1965 (prevalence 2%) in the esophagus, and 3 female lizards contained 4 adult female *T. iguanae* (prevalence 6%; mean intensity 1.3) in the stomach. One male lizard contained 3 *Oochoristica* sp. Lühe, 1898 (prevalence 2%) in the small intestines. One female lizard harbored 1 juvenile acanthocephalan *Acanthocephalus* sp. Koelreuther, 1771 (prevalence 2%) in the small intestines. All are new host records.

Two *H. maculata approximans* were infected with helminths (prevalence 13%); *Atractis penneri* (Gambino, 1957) (prevalence, 13%) and *Physaloptera* sp. Rudolphi, 1819 (prevalence, 7%). One female lizard harbored 31 *A. penneri* in the large intestine. One male contained 91 *A. penneri* in the large intestine as well as a concurrent stomach infection of 4 third-stage *Physaloptera* sp. The recovery of *Physaloptera* sp. represents a new host record.

Two species of nematodes have been previously reported from *C. texanus*. Gambino (1958)

reported 2 of 39 *C. texanus* to be infected with *Atractis penneri*. Specian and Ubelaker (1974) found *C. texanus* to be a host for *Parathelandros texanus* Specian and Ubelaker, 1974, but gave no additional details. *Thubunaea iguanae* is the third nematode species to be recovered from *C. texanus*.

One species of nematode has been previously reported from *H. maculata*. Gambino and Heyneman (1960) reported 23 of 48 *H. maculata* to be infected with *A. penneri*. *Physaloptera* sp. is the second nematode species to be recovered from *H. maculata*.

One species of cestode has been previously reported from *Cophosaurus texanus texanus*. McAllister (1988) reported 1 of 21 *C. texanus texanus* to be infected with *Mesocostoides* sp. Vaillant, 1863. *Oochoristica* sp. is the second cestode species to be recovered from *C. texanus*.

Although juvenile acanthocephalans have been reported occasionally from lizards collected in Arizona, this is apparently the first report of acanthocephalans from *C. texanus*. Benes (1985) reported 4 larval acanthocephalans from the coelom of 1 *Cnemidophorus tigris septentrionalis*. Goldberg and Bursey (1990a) found a juvenile acanthocephalan among the stomach contents of 1 *Cnemidophorus uniparens*. On another occasion, Goldberg and Bursey (1990b) recovered 3 unattached juveniles in the small intestines of 3 *Sceloporus jarrovi jarrovi*.

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Research Note

Grenacher's Borax Carmine for Staining Nematodes Inside Insects

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ABSTRACT: Grenacher's borax carmine stain was used to stain nematode parasites inside insects. This simple and useful procedure is described in detail. Examples of mermithid, *Romanomermis culicivorax*, and steinernematid nematodes, *Steinernema carpocapsae* and *S. feltiae*, stained well. The insects used were larval stages of both dipteran and coleopteran insect pests.

KEY WORDS: Nematoda, insect parasites, staining

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method, Grenacher's borax carmine, *Romanomermis culicivorax*, *Steinernema carpocapsae*, *Steinernema feltiae*.

During investigations on biological control of pest insects using nematodes, a need developed to show presence, size, and locations of nematodes inside bodies of insects. Usually insect lar-